

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference 900093.00017	FOR FURTHER ACTION	See item 4 below
International application No. PCT/US2004/019467	International filing date (<i>day/month/year</i>) 18 June 2004 (18.06.2004)	Priority date (<i>day/month/year</i>) 18 June 2003 (18.06.2003)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant THOMAS INDUSTRIES INC.		

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 *bis*.1(a).

2. This REPORT consists of a total of 4 sheets, including this cover sheet.

In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

- | | | |
|-------------------------------------|--------------|---|
| <input checked="" type="checkbox"/> | Box No. I | Basis of the report |
| <input type="checkbox"/> | Box No. II | Priority |
| <input type="checkbox"/> | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability |
| <input type="checkbox"/> | Box No. IV | Lack of unity of invention |
| <input checked="" type="checkbox"/> | Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/> | Box No. VI | Certain documents cited |
| <input type="checkbox"/> | Box No. VII | Certain defects in the international application |
| <input type="checkbox"/> | Box No. VIII | Certain observations on the international application |

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44*bis*.3(c) and 93*bis*.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44*bis* .2).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Date of issuance of this report 19 December 2005 (19.12.2005)
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PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

REC'D 13 MAY 2005

WIPO

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To:
JOHN D. FRANZINI
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WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing
(day/month/year)

11 MAY 2005

FOR FURTHER ACTION

See paragraph 2 below

Applicant's or agent's file reference

900093.00017

International application No.

International filing date (day/month/year)

Priority date (day/month/year)

PCT/US04/19467

18 June 2004 (18.06.2004)

18 June 2003 (18.06.2003)

International Patent Classification (IPC) or both national classification and IPC

IPC(7): F01B 13/04 and US Cl.: 92/12.2

Applicant

THOMAS INDUSTRIES, INC.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/ US

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WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/US04/19467

Box No. I Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

☐ a sequence listing

☐ table(s) related to the sequence listing

b. format of material

☐ in written format

☐ in computer readable form

c. time of filing/furnishing

☐ contained in international application as filed.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US04/19467

Box No. V Reasoned statement under Rule 43 bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims <u>1-10</u>	YES
	Claims <u>NONE</u>	NO
Inventive step (IS)	Claims <u>2-9</u>	YES
	Claims <u>1, 10</u>	NO
Industrial applicability (IA)	Claims <u>1-10</u>	YES
	Claims <u>NONE</u>	NO

2. Citations and explanations:

Claims 1 and 10 lack an inventive step under PCT Article 33(3) as being obvious over Reitzig (2003/0002990) in view of Lynn (6,450,777). Reitzig discloses a nutating pump with a pump housing 1, a prime mover, a drive shaft 2 driven by the prime mover, a plurality of pump cylinders 9, a plurality of pistons 7, a wobble member 35, and a universal joint 36 connecting the wobble member 35 to the housing 1. Reitzig does not disclose that the pistons are wobble pistons, wherein the wobble piston have a piston head and a piston rod fixedly connected to the piston head, the pistons are received in the associated pumping cylinders in a fit that permits wobbling motion of the piston head relative to the pumping cylinder as the piston is reciprocated, the piston rods are connected to the wobble member, and the piston head has a cup seal that forms a sliding seal with the associated pumping cylinder.

Lynn teaches for a nutating pump with a pump housing 11, a prime mover 10, a drive shaft driven by the prime mover 10, a plurality of pump cylinders 22 and that there are wobble pistons 46, wherein the wobble pistons 46 have a piston head 47 and a piston rod fixedly connected to the piston head 47, the pistons 46 are received in the associated pumping cylinders 22 in a fit that permits wobbling motion of the piston head 47 relative to the pumping cylinder 22 as the piston 46 is reciprocated, the piston rods are connected to the wobble member 40, and the piston head 47 has a cup seal 49 that forms a sliding seal with the associated pumping cylinder for the purposes of providing a simple and effective pumping apparatus. See Lynn col. 1, lines 41-45.

Since Reitzig and Lynn are both nutating pumps, it would have been obvious to one of ordinary skill in the art at the time of the present invention to modify the nutating pump of Reitzig, based on the teachings of Lynn, to include wobble pistons, wherein the wobble pistons have a piston head and a piston rod fixedly connected to the piston head, the pistons are received in the associated pumping cylinders in a fit that permits wobbling motion of the piston head relative to the pumping cylinder as the piston is reciprocated, the piston rods are connected to the wobble member, and the piston head has a cup seal that forms a sliding seal with the associated pumping cylinder for the purposes of providing a simple and effective pumping apparatus.

Claims 2-9 meet the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest the nutating member being connected to the piston rods with a ball and socket joint, hollow piston rods, and each piston rod being longer than the distance from the axis of the drive shaft to an axis of a cylinder associated with the piston rod.

Claims 1-10 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.